

REMARKS

Claim 1 is amended in order to more particularly point out, and distinctly claim the subject matter which the Applicants regard as their invention. The Applicants respectfully submit that no new matter has been added. Claims 2-6 and 9-20 are cancelled, without prejudice or disclaimer. It is believed that this Amendment is fully responsive to the Office Action dated August 24, 2009.

In the Final Office Action, Claim 3 was objected to because in lines 3 and 4, the phrase "wherein the distance, x (mm), of movement of the tufted portion and the frequency, y (times) of back-and-forth motion per minute" is awkwardly worded.

Claim 3 is cancelled. The wording of concern in Claim 3 is now restated in a different manner in amended Claim 1. In view of the above remarks, removal of this objection is respectfully requested.

In the Office Action, Claims 1-6, 8-13 and 19-20 are rejected under 35 U.S.C. §102(b) as being anticipated by Wiedemann et al.(U.S. Patent No. 5,448,792). Reconsideration and removal of this rejection are respectfully requested in view of the present amendments to Claim 1 and the following remarks.

The Office Action alleges that Wiedemann et al. discloses an electric toothbrush wherein the product of the distance (mm) of movement of the tufted portion and the frequency (times) of back-and-forth motion per minute is set in the range of 3000-9000 (column 2, lines 42-50); the product

of the distance (mm) of movement and the frequency is set in the range of 4500-7500; and satisfies the formula $y=ax+b$ where $a=3000$, $10,000 \leq b \leq 12,500$, $x > 0$; and the distance of movement of the tufted portion is set at 0.3-0.7 mm (column 3, lines 37-42).

In the Office Action, Claims 7 and 14-18 are rejected under 35 U.S.C. §103(a) as being unpatentable over Wiedemann et al. in view of Blaustein et al. (U.S. Publication 2003/0084525). Reconsideration and removal of this rejection are respectfully requested in view of the present amendments to Claim 1 and the following remarks.

The Office Action alleges that Wiedemann et al. does not specifically disclose filaments in which the tip portions of at least 30% or more of all tufted filaments are split into a plurality of portions. However, Blaustein et al. discloses a toothbrush in which the filaments in which the tip portions of at least 30% or more of all tufted filaments are split into a plurality of portions so as to enhance the effectiveness of the toothbrush.

In response to the above rejections, the amendment to Claim 1, "wherein the distance (mm) of movement of the tufted portion is set in the range of 0.5 - 3 mm, the frequency (times) of back-and-forth motion of the tufted portion per minute is set in the range of 2000 - 11,000, and the product of the distance (mm) of movement of the tufted portion and the frequency (times) of back-and-forth motion per minute is set in the range of 5000- 7000 clarifies the range of numerical values where the evaluation is indicated as ○ in Table 1 of paragraph [0053] of the description.

Wiedemann et al. teaches, "It has provided to be advantageous if the loosening movement is a rectilinear reciprocating movement in the direction of the longitudinal axis of the brush shank with a frequency of between 60 Hz and 70 Hz and an amplitude of approximately 2 mm, and ..." (col. 2, lines 42-50). The frequency between 60 Hz and 70 Hz corresponds to 3600 - 4200 of the frequency (y) of back-and-forth motion in the present invention, and the amplitude of Wiedemann et al. corresponds to the distance (x) of movement of the tufted portion of the present invention.

Accordingly, it can be said that the distance (x) of movement of the tufted portion and the frequency (y) of back-and-forth motion per minute of Wiedemann et al. as shown above falls respectively within the numerical value range of the present invention.

However, in Wiedemann et al., the product of the distance (x) of movement of the tufted portion and the frequency (y) of back-and-forth motion per minute is in the range of 7200 - 8400, which exceeds the maximum product value ($x \cdot y$) 7000 of the present invention.

Further, Wiedemann et al. teaches, "The brush-head carries a multitude of bristles 6. In accordance with the invention the brush-head performs a first movement 8 having a frequency higher than 30 Hz and having an amplitude of between 0.1 and 5 mm, this movement being superimposed on a second movement 9 having a substantially lower frequency, i.e., between 1 and 5 Hz (col. 3, lines 36-42).

In this case, the product ($x \cdot y$) is over 180. This numerical value is outside the range 5000 - 7000 as defined in present Claim 1, i.e., below 5000 or over 7000 depending on cases.

In this connection, refer to Table 1 in paragraph [0053] of the present description. As shown, superior plaque removal cannot be obtained when the product ($x \cdot y$) of the distance (x) of movement of the tufted portion and the frequency (y) of back-and-forth motion per minute is below 5000 or over 7000.

Further, Wiedemann et al. fails to teach or suggest setting the product of the distance (x :mm) of movement of the tufted portion and the frequency (y :times) of back-and-forth motion per minute within a predetermined range.

Conventionally, electric toothbrushes comprising conversion means, which converts the rotary movement of a rotation shaft of a motor into a back and forth movement of the output shaft in the axial direction via a crank mechanism, gear mechanism and cam mechanism, have been widely used.

However, the problem is that if the toothbrush is used by a patient with gingivitis, the gum is damaged due to too large distance of movement of tuft (paragraph [0005] of the present description).

On the other hand, in the electric toothbrush using a linear device or magnetic forces, the distance of movement of tuft connecting the output shaft is as small as 1 mm, therefore damage to the gum is decreased. However, the plaque removal is degraded by comparison with that of the usual electric toothbrush (paragraph [0006] of the present description).

The inventors of the present invention considered various uses of tools for oral hygiene and conducted a comprehensive study of electric toothbrushes that can be advantageously used even by

a patient with gingivitis and can increase plaque removal. The results obtained demonstrated that this object can be attained by setting appropriately the distance of movement of tuft and the frequency of back-and-forth motion. This finding led to the creation of the present invention (paragraph [0008] of the present description).

As is specified in paragraph [0053] Table 1 and paragraph [0054] of the description, Claim 1 defines the range of the product (x,y), thus realizing the electric toothbrushes that can be advantageously used by a patient with gingivitis and can increase plaque removal.

It is respectfully submitted that the above-mentioned effects cannot be expected from Wiedemann et al. which doesn't disclose the product of the distance of movement of the tufted portion and the frequency of back-and-force motion per minute.

It is respectfully submitted that the present claimed invention is distinct from and non-obvious in view of Wiedemann et al.

In view of the amendment to Claim 1, and the above remarks, removal of this rejection is respectfully requested.

In view of the aforementioned amendments and accompanying remarks, Claims 1, 7 and 8, as amended, are believed to be patentable and in condition for allowance, which action, at an early date, is requested.

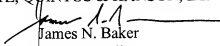
If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact the Applicants' undersigned agent at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

U.S. Patent Application Serial No. 10/561,542
Reply to OA dated March 31, 2010

In the event that this paper is not timely filed, the Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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Enclosure: Request for Continued Examination